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ABSTRACT

Written by a 2000 winner of the Nobel Prize in Economic Sciences, this paper explores the assumptions and foundations of current policies toward skill formation. The paper examines the conventional wisdom articulated by political leaders and draws on a body of recent scholarship that challenges many of the premises that govern popular policy discussions. This scholarship suggests that taking a broader view of the way skills are produced in a modern economy is more appropriate and, ultimately, more beneficial. The paper asserts that by focusing on cognitive skills as measured by achievement or IQ tests, policies exclude the critical importance of social skills, self-discipline, and a variety of non-cognitive skills that are known to determine success in life. Furthermore, the paper maintains, this preoccupation with cognition and academic "smarts" as measured by test scores to the exclusion of social adaptability and motivation causes a serious bias in the evaluation of many human capital interventions. The paper also discusses recent research demonstrating the vital importance of the early preschool years for skill formation and the success and cost effectiveness of early intervention. (EV)

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"The real question is how to use the available funds wisely. The best evidence supports the policy prescription:

Invest in the Very Young."

James J. Heckman, PhD
Nobel Laureate in Economic Sciences
2000

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'On a purely economic basis...'

James J. Heckman, Ph.D., was awarded the Nobel Prize in Economic Sciences in 2000, and currently serves as the Henry Schultz Distinguished Service Professor of Economics at the University of Chicago. Interestingly, Dr. Heckman began his research by investigating the economic return of job retraining programs for steelworkers. He realized that those programs were largely ineffective because it was more difficult for the steelworkers to learn new skills at a later age and because there were fewer years to recoup the cost of retraining. Then he made a surprising change in his thinking.

Having started at one end of the age spectrum, Dr. Heckman soon ended up at the other end. He analyzed the investments made in early childhood programs and learned that, at the same cost there are far greater gains to be had when children are younger. Dr. Heckman came to believe that one can make a bigger difference and have more of an impact with younger children because the social skills they learn in the very early years set a pattern for acquiring life skills later. "On a purely economic basis," Dr. Heckman says, "it makes a lot of sense to invest in the young."

Since its founding in 1982, the Ounce of Prevention Fund has approached its work with children and families guided by the belief that it is both more caring *and cost effective* to promote healthy child development from the beginning of a child's life than it is to treat problems later. This proposition is key, as well, to making well-informed decisions about public policies, especially during times of fiscal constraint.

In this paper, Dr. Heckman explores the assumptions and foundations of current policies toward skill formation. He examines the conventional wisdom articulated by our political leaders and draws on a body of recent scholarship that challenges many of the premises that govern popular policy discussions. This scholarship suggests that taking a broader view of the way skills are produced in a modern economy is more appropriate and, ultimately, more beneficial. This paper has been adapted from Dr. Heckman's journal article, *"Fostering Human Capital,"* and his October 2001 lecture, "It's Good Business to Invest in Young Children."

"Early learning begets later learning and early success breeds later success."

"Current policies regarding education and job training are based on fundamental misconceptions about the way socially useful skills embodied in persons are produced. By focusing on cognitive skills as measured by achievement or IQ tests, they exclude the critical importance of social skills, self-discipline and a variety of non-cognitive skills that are known to determine success in life. Furthermore, this preoccupation with cognition and academic 'smarts' as measured by test scores to the exclusion of social adaptability and motivation causes a serious bias in the evaluation of many human capital interventions.

The conventional wisdom espoused by most politicians, educated laypersons and even many academics places formal educational institutions in a central role as the main producers of the skills required by the modern economy. However, it neglects the crucial roles of families and firms in fostering skill and the variety of abilities required to succeed in the modern economy. While popular discussions of how skills are formed and developed almost always focus on expenditures in schools or on educational reforms, they neglect important non-institutional sources of skill formation, which are equally important, if not more important, producers of the varieties of skills that are useful in a modern economy."

The Ounce of Prevention Fund and the Irving B. Harris Graduate School of Public Policy Studies at the University of Chicago are pleased to share Dr. James Heckman's provocative ideas and perspectives. While we may not entirely agree with every conclusion expressed here, we hope this report will encourage vigorous discussions about the critical importance of investing in young children—and we welcome your thoughts and comments.

Learning starts in infancy

Mounting research, as well as everyday common sense, shows how the early social and emotional experiences of very young children affect their future growth and potential. To be most successful in school, young children must master a variety of complicated, inter-related concepts. For instance, a child must have a sense of confidence–a belief that she is more likely than not, to succeed at what she undertakes. She must also have a sense of curiosity, persistence and self-control. At the same time, the child must be able to communicate clearly and must be able to engage with others while balancing her own needs with those of others in a group. Frankly, these are demanding concepts. But when a baby has consistently received what she needs–comfort when upset, stimulation that is not overwhelming, and plenty of loving, playful interactions with gentle encouragements, such as, "You can do it, honey," and "Great"–she learns to trust the world around her and she is more able to develop the social and emotional skills needed to succeed later in school and throughout life.

"Learning starts in infancy, long before formal education begins, and continues throughout life. Recent research in psychology and cognition demonstrates how vitally important the early preschool years are for skill formation. Significantly, this is a time when human ability and motivation are shaped by families and non-institutional environments. Early learning begets later learning and early success breeds later success, just as early failure breeds later failure. Success or failure at this stage lays the foundation for success or failure in school, which in turn leads to success or failure in post-school learning. Therefore, formal or institutional education is only one aspect of the learning process, albeit an important one, and recent research indicates that it is not necessarily the most important one.

"The later in life we attempt to repair early deficits, the costlier the remediation becomes."

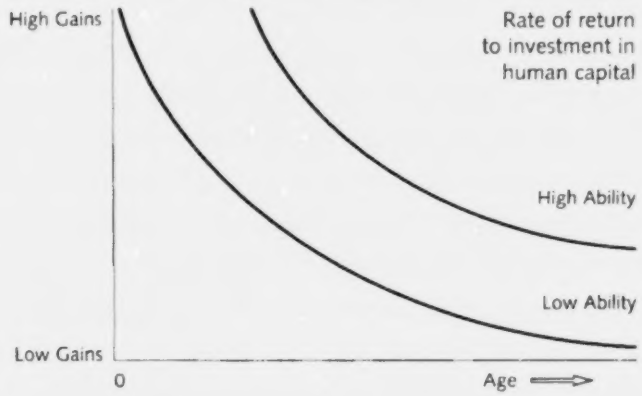
Another continuing blind spot in the vision of most educational planners and policy makers is a preoccupation with achievement tests and measures of cognitive skill as indicators of the success of an educational intervention. By narrowly focusing on cognition, they ignore the full array of socially and economically valuable non-cognitive skills and motivation produced by schools, families and other institutions. This emphasis also critically affects the way certain early intervention programs have been evaluated. For example, while enriched early intervention programs do not substantially alter IQ, they do substantially raise the non-cognitive skills and social competence of participants."

"Another common error in the analysis of human capital policies is the assumption that abilities are fixed at very early ages. This static conception of ability is at odds with a large body of research in the child development literature. More specifically, research has shown that, in the early years of life, basic abilities can be altered. Schooling produces ability and ability creates a demand for more challenging schooling. Therefore, the early human capital literature suggests a false contrast between human capital and innate ability as rival determinants of earnings.

A more correct view of ability (or rather abilities) is that they are developed in a variety of learning situations and that early ability in turn fosters further learning. In other words, more able people acquire more skills; and more skilled people become more able. This 'dynamic complementarity' characterizes skill and ability formation and our economic models have to be modified to account for it.

In an era of tight budgets, it is far from obvious that investments in low skill workers made obsolete by changes in technology can be justified on any but political grounds. The major cost of such investment is the diversion of resources away from the young and the more trainable for whom a human capital investment strategy is likely to be more effective and for whom it is likely to produce favorable outcomes in the long run.

Also missing from current policy discussions of education and training policy is any consideration of priorities or recognition of the need to prioritize. Unfortunately, in an era of tight government budgets, it is impractical to consider active investment programs for all persons. The real question is how to use the available funds wisely. The best evidence supports the policy prescription: invest in the very young and improve basic learning and socialization skills."



"Recent studies of early childhood investments have shown remarkable success and indicate that the early years are important for early learning."

High Returns from Early Investments

The figure above conveys two very different ideas. The first is a theoretical proposition. For the same level of investment at each age, the return is higher in human capital when a dollar is spent on the young than when it is spent on the old. This is so partly because the old have a shorter time to recoup their investment due to the shorter time remaining to them (Becker, 1964). An even more important point not made by Becker is that human capital has fundamental dynamic complementarity features. That is, learning begets learning and skills acquired early on make later learning easier. Ultimately, more able people find learning easier.

The second interpretation is an empirical description of the current level of spending on human resources in the American economy. At current levels of investment, the returns to investment in the young are quite high while the returns to investment in the old and less able are quite low. A socially optimal investment strategy would equate returns across all investment levels. Therefore, the central conclusion of this paper is that at current total investment levels, efficiency would be enhanced if human capital investment were reallocated to the young.

The importance of 'lifetime achievement'

Investments in social policies that intervene in the early years have very high rates of return while social policies that intervene at later ages in the life cycle have low economic returns. A large body of scientific evidence shows a "persistent pattern of strong effects" derived from early interventions. Significantly, these substantial, long-term benefits are not necessarily limited to intellectual gains, but are most clearly seen by measures of "social performance" and "lifetime achievement." In other words, people who participate in enriched early childhood programs are more likely to complete school and much less likely to require welfare benefits, become teen parents or participate in criminal activities. Rather, they become productive adults.

"If public policy aims to encourage college attendance, a focus on improving the environments of children and improving preparation for college will be more effective than grant or loan programs to economically or cognitively disadvantaged children in their late teen-age years. Since what is known about cognitive ability is that it is formed relatively early in life and becomes less malleable as children age, programs that operate later in the life cycle are likely to be both ineffective in promoting college attendance and wasteful of public funds.

Recent studies of early childhood investments have shown remarkable success and indicate that the early years are important for early learning. Moreover, early childhood interventions of high quality have lasting effects on learning and motivation.

For example, the Syracuse Family Development Research Program provided family development support for disadvantaged children from prenatal care through age five. Reductions in problems with probation and criminal offenses ten years later were as large as 70% between program and control children. Girls who participated in the program also showed greater school achievement (Lally, Mangione, and Honig, 1988). Furthermore, studies of early intervention programs have found short-term increases in test scores, less grade retention, and higher high school graduation rates among enrolled children. Of those studies that examine pre-delinquent or criminal behavior, most have found lower rates of deviant behavior among program participants. The best evidence suggests that learning begets learning, that early investments in learning are effective. As a society, we cannot afford to postpone investing in children until they become adults, nor can we wait until they reach school age—a time when it may be too late to intervene. Since learning is a dynamic process, it is most effective when it begins at a young age and continues through adulthood. The returns to human capital investments are greatest for the young for two reasons: (a) skill begets skill and (b) younger persons have a longer horizon over which to recoup the fruits of their investments. Therefore, skill remediation programs for adults with severe educational disadvantages are much less efficient compared to early intervention programs. So are training programs for more mature displaced workers. At current levels of investment, cost-effective returns are highest for the young."

"Early childhood interventions of high quality have lasting effects on learning and motivation."

Children are Born 'Ready to Learn'

A Developmental Perspective

A national expert on early childhood, J. Ronald Lally, Ed.D., has been studying and developing interventions for young children and their families since 1966, including the landmark Syracuse Family Development Research Program. Through numerous publications and an ongoing series of acclaimed infant-toddler training videos, Dr. Lally has contributed over three decades of pioneering research and practical experience to early childhood issues, particularly focusing on social-emotional development in infancy and the impact of early intervention on adult functioning.

As Dr. Heckman's remarks in this paper note, the high quality interventions provided through the Syracuse program demonstrated remarkably positive and lasting effects on the learning and motivation of its participants in both their school and social behavior. Although Dr. Heckman and Dr. Lally belong to different disciplines and proceed from different perspectives, through their years of extensive research each has arrived at the recognition of the key role of early and positive social-emotional development to later school and life achievements.

"We need to broaden the definition of school readiness to include social and emotional competencies necessary for good citizenship – and I emphasize good citizenship," Dr. Lally says. "The notion of paying active attention to the early development of citizens may seem like common sense, but it is not now on the table in discussions about school readiness. As a matter of fact, attention to social-emotional domains have been characterized by many school readiness proponents as 'fluff' and 'off target.' Yet, it is clear from the conclusions recently reached by three prominent groups of professionals—the National Academy of Sciences, the National Education Goals Panel, and the National Institute of Mental Health—that if we want children to be ready for school we must attend to more things than reading and early math and language. Children are born 'ready to learn,' but we must also attend to their social and emotional development. I am puzzled why we are taking such a narrow stance in this country toward preparing children for school and not thinking more clearly and more broadly about preparing them for life. We cannot prepare children to be ready for third grade by treating 2- and 3-year-olds like third graders. Rather, we need to help people see that children need an emotional and intellectual grounding to be able to think deeply and creatively about new ways to relate to each other, the world around them, and to have the confidence to act upon these thoughts."

In the final analysis, whether society approaches the issue of school readiness from either an economic or developmental perspective, neglecting to recognize the importance of social-emotional development, in addition to intellectual development, is a path that shortchanges both children and society.

"An important lesson to draw from the entire literature on successful early interventions is that it is the social skills and motivation of the child that are more easily altered—not IQ. These social and emotional skills affect performance in school and in the workplace. We too often have a bias toward believing that only cognitive skills are of fundamental importance to success in life."

James J. Heckman, PhD
Nobel Laureate in Economic Sciences
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